



INCIDENTAL HARASSMENT AUTHORIZATION

The Lamont-Doherty Earth Observatory of Columbia University (L-DEO) is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(D)) to harass marine mammals incidental to a geophysical survey in the Northeast Pacific Ocean, when adhering to the following terms and conditions.

1. This Incidental Harassment Authorization (IHA) is valid for a period of one year from the date of issuance.
2. This IHA is valid only for geophysical survey activity as specified in L-DEO's IHA application and using an array aboard the R/V *Langseth* with characteristics specified in the IHA application, in the Northeast Pacific Ocean along the Cascadia Subduction Zone.
3. General Conditions
 - (a) A copy of this IHA must be in the possession of L-DEO, the vessel operator, the lead protected species observer (PSO) and any other relevant designees of L-DEO operating under the authority of this IHA.
 - (b) The species authorized for taking are listed in Table 1. The taking, by Level A and Level B harassment only, is limited to the species and numbers listed in Table 1.
 - (c) The taking by serious injury or death of any of the species listed in Table 1 or any taking of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA. Any taking exceeding the authorized amounts listed in Table 1 is prohibited and may result in the modification, suspension, or revocation of this IHA.
 - (d) During use of the acoustic source, if any marine mammal species that are not listed in Table 1 appear within or enter the Level B harassment zone (Table 2) or a species for which authorization has been granted but the takes have been met, is observed within or approaching the Level A or Level B harassment zones (Tables 2-3), the acoustic source must be shut down.
 - (e) L-DEO must ensure that relevant vessel personnel and PSO team participate in a joint onboard briefing led by the vessel operator and lead PSO to ensure that responsibilities, communication procedures, protected species monitoring protocols, operational procedures, and IHA requirements are clearly understood.

4. Mitigation Measures

The holder of this Authorization is required to implement the following mitigation measures:



- (a) L-DEO must use independent, dedicated, trained visual and acoustic PSOs, meaning that the PSOs must be employed by a third-party observer provider, must not have tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of protected species and mitigation requirements (including brief alerts regarding maritime hazards), and must have successfully completed an approved PSO training course appropriate for their designated task (visual or acoustic). Individual PSOs may perform acoustic and visual PSO duties (though not at the same time).
- (b) At least one visual and two acoustic PSOs aboard the R/V *Langseth* and at least one visual PSO aboard the second vessel (see condition 4(c)(iii)) must have a minimum of 90 days at-sea experience working in those roles, respectively, during a deep penetration seismic survey, with no more than 18 months elapsed since the conclusion of the at-sea experience.
- (c) Visual Observation
 - (i) During survey operations (*e.g.*, any day on which use of the acoustic source is planned to occur, and whenever the acoustic source is in the water, whether activated or not), a minimum of two PSOs must be on duty and conducting visual observations at all times during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset) and 30 minutes prior to and during ramp-up of the airgun array. Visual monitoring of the exclusion and buffer zones must begin no less than 30 minutes prior to ramp-up and must continue until one hour after use of the acoustic source ceases or until 30 minutes past sunset.
 - (ii) Visual PSOs must coordinate to ensure 360° visual coverage around the vessel from the most appropriate observation posts, and must conduct visual observations using binoculars and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. Estimated harassment zones are provided in Tables 2-3 for reference.
 - (iii) During survey operations in water depths shallower than 200 m between Tillamook Head, Oregon (45.9460903° N) and Barkley Sound, British Columbia (48.780291° N), and while surveying within Olympic Coast National Marine Sanctuary, a second vessel with additional visual PSOs must accompany the R/V *Langseth* and survey approximately 5 km ahead of the R/V *Langseth*. Two visual PSOs must be on watch on the second vessel during all such survey operations (according to the requirements provided in 4(c)(i) of this IHA) and communicate all observations of marine mammals to PSOs on the R/V *Langseth*.
 - (iv) Visual PSOs must immediately communicate all observations to the acoustic PSO(s) on duty, including any determination by the PSO

regarding species identification, distance, and bearing and the degree of confidence in the determination.

- (v) During good conditions (*e.g.*, daylight hours; Beaufort sea state (BSS) 3 or less), visual PSOs must conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the acoustic source and between acquisition periods, to the maximum extent practicable.
 - (vi) Visual PSOs may be on watch for a maximum of four consecutive hours followed by a break of at least one hour between watches and may conduct a maximum of 12 hours of observation per 24-hour period. Combined observational duties (visual and acoustic but not at same time) may not exceed 12 hours per 24-hour period for any individual PSO.
- (d) Acoustic Monitoring
- (i) The source vessel must use a towed passive acoustic monitoring system (PAM) which must be monitored by, at a minimum, one on duty acoustic PSO beginning at least 30 minutes prior to ramp-up and at all times during use of the acoustic source.
 - (ii) When both visual and acoustic PSOs are on duty, all detections must be immediately communicated to the remainder of the on-duty PSO team for potential verification of visual observations by the acoustic PSO or of acoustic detections by visual PSOs.
 - (iii) Acoustic PSOs may be on watch for a maximum of four consecutive hours followed by a break of at least one hour between watches and may conduct a maximum of 12 hours of observation per 24-hour period. Combined observational duties may not exceed 12 hours per 24-hour period for any individual PSO.
 - (iv) Survey activity may continue for 30 minutes when the PAM system malfunctions or is damaged, while the PAM operator diagnoses the issue. If the diagnosis indicates that the PAM system must be repaired to solve the problem, operations may continue for an additional five hours without acoustic monitoring during daylight hours only under the following conditions:
 - a. Sea state is less than or equal to BSS 4;
 - b. With the exception of delphinids (other than killer whales), no marine mammals detected solely by PAM in the applicable exclusion zone in the previous two hours;

- c. NMFS is notified via email as soon as practicable with the time and location in which operations began occurring without an active PAM system; and
 - d. Operations with an active acoustic source, but without an operating PAM system, do not exceed a cumulative total of five hours in any 24-hour period.
- (e) Exclusion zone and buffer zone
 - (i) Except as provided below in 4(e)(ii), the PSOs must establish and monitor a 500-m exclusion zone and additional 500-m buffer zone (total 1,000 m). The 1,000-m zone shall serve to focus observational effort but not limit such effort; observations of marine mammals beyond this distance shall also be recorded as described in 5(d) below and/or trigger shutdown as described in 4(g)(iv) below, as appropriate. The exclusion zone encompasses the area at and below the sea surface out to a radius of 500 m from the edges of the airgun array (rather than being based on the center of the array or around the vessel itself) (0–500 m). The buffer zone encompasses the area at and below the sea surface from the edge of the exclusion zone, out to a radius of 1,000 meters from the edges of the airgun array (500–1,000 m). During use of the acoustic source, occurrence of marine mammals within the buffer zone (but outside the exclusion zone) must be communicated to the operator to prepare for the potential shutdown of the acoustic source. PSOs must monitor the exclusion zone and buffer zone for a minimum of 30 minutes prior to ramp-up (*i.e.*, pre-start clearance).
 - (ii) An extended 1,500-m exclusion zone must be established for all beaked whales, and dwarf and pygmy sperm whales. No buffer zone is required.
- (f) Pre-start clearance and Ramp-up
 - (i) A ramp-up procedure must be followed at all times as part of the activation of the acoustic source, except as described under 4(f)(vi).
 - (ii) Ramp-up must not be initiated if any marine mammal is within the exclusion or buffer zone. If a marine mammal is observed within the exclusion zone or the buffer zone during the 30 minute pre-start clearance period, ramp-up may not begin until the animal(s) has been observed exiting the zone or until an additional time period has elapsed with no further sightings (15 minutes for small odontocetes and pinnipeds, and 30 minutes for mysticetes and all other odontocetes, including sperm whales, pygmy sperm whales, dwarf sperm whales, beaked whales, pilot whales, killer whales, false killer whales, and Risso's dolphins).

- (iii) Ramp-up must begin by activating a single airgun of the smallest volume in the array and must continue in stages by doubling the number of active elements at the commencement of each stage, with each stage of approximately the same duration. Duration must not be less than 20 minutes.
 - (iv) PSOs must monitor the exclusion and buffer zones during ramp-up, and ramp-up must cease and the source must be shut down upon visual observation or acoustic detection of a marine mammal within the exclusion zone. Once ramp-up has begun, observations of marine mammals within the buffer zone do not require shutdown, but such observation must be communicated to the operator to prepare for the potential shutdown.
 - (v) Ramp-up may occur at times of poor visibility, including nighttime, if appropriate acoustic monitoring has occurred with no detections in the 30 minutes prior to beginning ramp-up.
 - (vi) If the acoustic source is shut down for brief periods (*i.e.*, less than 30 minutes) for reasons other than that described for shutdown (*e.g.*, mechanical difficulty), it may be activated again without ramp-up if PSOs have maintained constant visual and/or acoustic observation and no visual or acoustic detections of marine mammals have occurred within the applicable exclusion zone. For any longer shutdown, pre-start clearance observation and ramp-up are required. For any shutdown at night or in periods of poor visibility (*e.g.*, BSS 4 or greater), ramp-up is required, but if the shutdown period was brief and constant observation was maintained, pre-start clearance watch is not required.
 - (vii) Testing of the acoustic source involving all elements requires ramp-up. Testing limited to individual source elements or strings does not require ramp-up but does require pre-start clearance watch.
- (g) Shutdown
- (i) Any PSO on duty has the authority to delay the start of survey operations or to call for shutdown of the acoustic source.
 - (ii) The operator must establish and maintain clear lines of communication directly between PSOs on duty and crew controlling the acoustic source to ensure that shutdown commands are conveyed swiftly while allowing PSOs to maintain watch.
 - (iii) When the airgun array is active (*i.e.*, anytime one or more airguns is active, including during ramp-up) and (1) a marine mammal (excluding delphinids of the genera described in 4(g)(v)) appears within or enters the exclusion zone and/or (2) a marine mammal is detected acoustically and

localized within the exclusion zone, the acoustic source must be shut down. When shutdown is called for by a PSO, the airgun array must be immediately deactivated. Any dispute regarding a PSO shutdown must be resolved after deactivation.

- (iv) The airgun array must be shut down if any of the following are detected at any distance:
 - a. North Pacific right whale.
 - b. Killer whale (of any ecotype).
 - c. Large whale (defined as a sperm whale or any mysticete species) with a calf (defined as an animal less than two-thirds the body size of an adult observed to be in close association with an adult).
 - d. Aggregation of six or more large whales.
- (v) The shutdown requirements described in 4(g)(iii) shall be waived for small dolphins of the following genera: *Tursiops*, *Delphinus*, *Stenella*, *Lagenorhynchus*, and *Lissodelphis*.
 - a. If a small delphinid (individual of the Family Delphinidae, which includes the aforementioned dolphin genera), is visually and/or acoustically detected and localized within the exclusion zone, no shutdown is required unless the acoustic PSO or a visual PSO confirms the individual to be of a genera other than those listed above, in which case a shutdown is required.
 - b. If there is uncertainty regarding identification, visual PSOs may use best professional judgment in making the decision to call for a shutdown.
- (vi) Upon implementation of shutdown, the source may be reactivated after the marine mammal(s) has been observed exiting the applicable exclusion zone (*i.e.*, animal is not required to fully exit the buffer zone where applicable) or following a clearance period (15 minutes for small odontocetes and pinnipeds, and 30 minutes for mysticetes and all other odontocetes, including sperm whales, pygmy sperm whales, dwarf sperm whales, beaked whales, pilot whales, killer whales, false killer whales, and Risso's dolphins) with no further observation of the marine mammal(s).
- (h) Vessel operators and crews must maintain a vigilant watch for all marine mammals and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any marine mammal. A visual observer aboard the vessel must monitor a vessel strike avoidance zone around the vessel (specific distances detailed below). Visual observers monitoring the vessel strike

avoidance zone may be third-party observers (*i.e.*, PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to 1) distinguish marine mammals from other phenomena and 2) broadly to identify a marine mammal as a right whale, other whale (defined in this context as sperm whales or baleen whales other than right whales), or other marine mammal.

- (i) Vessel speeds must be reduced to 10 knots or less when mother/calf pairs, pods, or large assemblages of any marine mammal are observed near a vessel.
 - (ii) Vessels must maintain a minimum separation distance of 500 m from North Pacific right whales and 100 m from other large whales (*i.e.*, sperm whales and all other baleen whales).
 - (iii) The vessel must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel).
 - (iv) When marine mammals are sighted while a vessel is underway, the vessel must take action as necessary to avoid violating the relevant separation distance (*e.g.*, attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If marine mammals are sighted within the relevant separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained.
 - (v) These requirements do not apply in any case where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.
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- (i) Survey operations in waters shallower than 200 m between Tillamook Head, Oregon (45.9460903° N) and Barkley Sound, British Columbia (48.780291° N), and survey operations within Olympic Coast National Marine Sanctuary, must be conducted in daylight hours only (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset).
 - (j) On each day of survey operations, L-DEO must contact NMFS Northwest Fisheries Science Center (206-860-3200), NMFS West Coast Regional Office (206-526-6150), The Whale Museum (800-562-8832), Orca Network (360-331-3543), Canada's Department of Fisheries and Oceans (604-666-9965), and Olympic Coast National Marine Sanctuary (208-410-0260), to obtain any available information regarding the whereabouts of Southern Resident killer whales.

5. Monitoring Requirements

The holder of this Authorization is required to conduct marine mammal monitoring during survey activity. Monitoring must be conducted in accordance with the following requirements:

- (a) The operator must provide PSOs with bigeye binoculars (*e.g.*, 25 x 150; 2.7 view angle; individual ocular focus; height control) of appropriate quality solely for PSO use. These must be pedestal-mounted on the deck at the most appropriate vantage point that provides for optimal sea surface observation, PSO safety, and safe operation of the vessel.
- (b) The operator must work with the selected third-party observer provider to ensure PSOs have all equipment (including backup equipment) needed to adequately perform necessary tasks, including accurate determination of distance and bearing to observed marine mammals. Such equipment, at a minimum, must include:
 - (i) PAM must include a system that has been verified and tested by an experienced acoustic PSO that will be using it during the trip for which monitoring is required.
 - (ii) Reticle binoculars (*e.g.*, 7 x 50) of appropriate quality (at least one per PSO, plus backups).
 - (iii) Global Positioning Unit (GPS) (plus backup).
 - (iv) Digital single-lens reflex cameras of appropriate quality that capture photographs and video (plus backup).
 - (v) Compass (plus backup).
 - (vi) Radios for communication among vessel crew and PSOs (at least one per PSO, plus backups).
 - (vii) Any other tools necessary to adequately perform necessary PSO tasks.
- (c) Protected Species Observers (PSOs, Visual and Acoustic) Qualifications
 - (i) PSOs must have successfully completed an acceptable PSO training course appropriate for their designated task (visual or acoustic). Acoustic PSOs are required to complete specialized training for operating PAM systems and are encouraged to have familiarity with the vessel with which they will be working.
 - (ii) NMFS must review and approve PSO resumes.

- (iii) NMFS shall have one week to approve PSOs from the time that the necessary information is submitted, after which PSOs meeting the minimum requirements shall automatically be considered approved.
 - (iv) One visual PSO with experience as shown in condition 4(b) of this authorization shall be designated as the lead for the entire protected species observation team. The lead must coordinate duty schedules and roles for the PSO team and serve as primary point of contact for the vessel operator. (Note that the responsibility of coordinating duty schedules and roles may instead be assigned to a shore-based, third-party monitoring coordinator.) To the maximum extent practicable, the lead PSO must devise the duty schedule such that experienced PSOs are on duty with those PSOs with appropriate training but who have not yet gained relevant experience.
 - (v) PSOs must successfully complete relevant training, including completion of all required coursework and passing (80 percent or greater) a written and/or oral examination developed for the training program.
 - (vi) PSOs must have successfully attained a bachelor's degree from an accredited college or university with a major in one of the natural sciences, a minimum of 30 semester hours or equivalent in the biological sciences, and at least one undergraduate course in math or statistics.
 - (vii) The educational requirements may be waived if the PSO has acquired the relevant skills through alternate experience. Requests for such a waiver must be submitted to NMFS and must include written justification. Requests must be granted or denied (with justification) by NMFS within one week of receipt of submitted information. Alternate experience that may be considered includes, but is not limited to (1) secondary education and/or experience comparable to PSO duties; (2) previous work experience conducting academic, commercial, or government-sponsored protected species surveys; or (3) previous work experience as a PSO; the PSO should demonstrate good standing and consistently good performance of PSO duties.
- (d) Data Collection
- (i) PSOs must use standardized data collection forms, whether hard copy or electronic. PSOs must record detailed information about any implementation of mitigation requirements, including the distance of animals to the acoustic source and description of specific actions that ensued, the behavior of the animal(s), any observed changes in behavior before and after implementation of mitigation, and if shutdown was implemented, the length of time before any subsequent ramp-up of the acoustic source. If required mitigation was not implemented, PSOs should record a description of the circumstances.

- (ii) At a minimum, the following information must be recorded:
 - a. Vessel names (source vessel and other vessels associated with survey) and call signs;
 - b. PSO names and affiliations;
 - c. Date and participants of PSO briefings (as discussed in General Requirement);
 - d. Dates of departures and returns to port with port name;
 - e. Dates and times (Greenwich Mean Time) of survey effort and times corresponding with PSO effort;
 - f. Vessel location (latitude/longitude) when survey effort began and ended and vessel location at beginning and end of visual PSO duty shifts;
 - g. Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change;
 - h. Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions changed significantly), including BSS and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon;
 - i. Factors that may have contributed to impaired observations during each PSO shift change or as needed as environmental conditions changed (*e.g.*, vessel traffic, equipment malfunctions); and
 - j. Survey activity information, such as acoustic source power output while in operation, number and volume of airguns operating in the array, tow depth of the array, and any other notes of significance (*i.e.*, pre-start clearance, ramp-up, shutdown, testing, shooting, ramp-up completion, end of operations, streamers, etc.).
- (iii) Upon visual observation of any marine mammal, the following information must be recorded:
 - a. Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);
 - b. PSO who sighted the animal;
 - c. Time of sighting;

- d. Vessel location at time of sighting;
- e. Water depth;
- f. Direction of vessel's travel (compass direction);
- g. Direction of animal's travel relative to the vessel;
- h. Pace of the animal;
- i. Estimated distance to the animal and its heading relative to vessel at initial sighting;
- j. Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified) and the composition of the group if there is a mix of species;
- k. Estimated number of animals (high/low/best);
- l. Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);
- m. Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);
- n. Detailed behavior observations (*e.g.*, number of blows/breaths, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);
- o. Animal's closest point of approach (CPA) and/or closest distance from any element of the acoustic source;
- p. Platform activity at time of sighting (*e.g.*, deploying, recovering, testing, shooting, data acquisition, other); and
- q. Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up) and time and location of the action.

- (iv) If a marine mammal is detected while using the PAM system, the following information must be recorded:

- a. An acoustic encounter identification number, and whether the detection was linked with a visual sighting;
- b. Date and time when first and last heard;
- c. Types and nature of sounds heard (*e.g.*, clicks, whistles, creaks, burst pulses, continuous, sporadic, strength of signal);
- d. Any additional information recorded such as water depth of the hydrophone array, bearing of the animal to the vessel (if determinable), species or taxonomic group (if determinable), spectrogram screenshot, and any other notable information.

6. Reporting

- (a) L-DEO must submit a draft comprehensive report to NMFS on all activities and monitoring results within 90 days of the completion of the survey or expiration of the IHA, whichever comes sooner. A final report must be submitted within 30 days following resolution of any comments on the draft report. The draft report must include the following:
 - (i) Summary of all activities conducted and sightings of marine mammals near the activities;
 - (ii) Summary of all data required to be collected (see condition 5(d));
 - (iii) Full documentation of methods, results, and interpretation pertaining to all monitoring;
 - (iv) Summary of dates and locations of survey operations (including (1) the number of days on which the airgun array was active and (2) the percentage of time and total time the array was active during daylight vs. nighttime hours (including dawn and dusk)) and all marine mammal sightings (dates, times, locations, activities, associated survey activities);
 - (v) Geo-referenced time-stamped vessel tracklines for all time periods during which airguns were operating. Tracklines should include points recording any change in airgun status (*e.g.*, when the airguns began operating, when they were turned off, or when they changed from full array to single gun or vice versa);
 - (vi) GIS files in ESRI shapefile format and UTC date and time, latitude in decimal degrees, and longitude in decimal degrees. All coordinates must be referenced to the WGS84 geographic coordinate system; and
 - (vii) Raw observational data.

(b) Reporting Injured or Dead Marine Mammals

- (i) Discovery of Injured or Dead Marine Mammal – In the event that personnel involved in the survey activities covered by the authorization discover an injured or dead marine mammal, L-DEO must report the incident to the Office of Protected Resources (OPR) (301-427-8401), NMFS and the NMFS West Coast Regional Stranding Coordinator (866-767-6114) as soon as feasible. The report must include the following information:
 - a. Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
 - b. Species identification (if known) or description of the animal(s) involved;
 - c. Condition of the animal(s) (including carcass condition if the animal is dead);
 - d. Observed behaviors of the animal(s), if alive;
 - e. If available, photographs or video footage of the animal(s); and
 - f. General circumstances under which the animal was discovered.
- (ii) Vessel Strike – In the event of a ship strike of a marine mammal by any vessel involved in the activities covered by the authorization, L-DEO must report the incident to OPR, NMFS and to the West Coast Regional Stranding Coordinator as soon as feasible. The report must include the following information:
 - a. Time, date, and location (latitude/longitude) of the incident;
 - b. Species identification (if known) or description of the animal(s) involved;
 - c. Vessel's speed during and leading up to the incident;
 - d. Vessel's course/heading and what operations were being conducted (if applicable);
 - e. Status of all sound sources in use;
 - f. Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;

- g. Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;
 - h. Estimated size and length of animal that was struck;
 - i. Description of the behavior of the marine mammal immediately preceding and following the strike;
 - j. If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;
 - k. Estimated fate of the animal (*e.g.*, dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and
 - l. To the extent practicable, photographs or video footage of the animal(s).
- (c) Reporting Species of Concern – L-DEO must immediately report all observations of Southern Resident killer whales and North Pacific right whales to OPR, NMFS (301-427-8401). If Southern Resident killer whales or North Pacific right whales are observed within Olympic Coast National Marine Sanctuary, L-DEO must also immediately report the sightings to the Sanctuary (208-410-0260). The report must include the following information:
- (i) Time, date, and location (latitude/longitude, water depth) of the observation;
 - (ii) Description of the animal(s) seen, including estimated number of animals, estimated age and sex classes observed, and distinguishing features;
 - (iii) Behavior observations (*e.g.*, number of blows/breaths, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible);
 - (iv) Direction of vessel's travel (compass direction) and direction of animal's travel relative to the vessel; and
 - (v) Platform activity at time of sighting (*e.g.*, deploying, recovering, testing, shooting, data acquisition, other).
7. Actions to minimize additional harm to live-stranded (or milling) marine mammals – In the event of a live stranding (or near-shore atypical milling) event within 50 km of the survey operations, where the NMFS stranding network is engaged in herding or other interventions to return animals to the water, the Director of OPR, NMFS (or designee) will advise L-DEO of the need to implement shutdown procedures for all active acoustic

sources operating within 50 km of the stranding. Shutdown procedures for live stranding or milling marine mammals include the following:

- (a) If at any time, the marine mammal(s) die or are euthanized, or if herding/intervention efforts are stopped, the Director of OPR, NMFS (or designee) will advise L-DEO that the shutdown around the animals' location is no longer needed.
- (b) Otherwise, shutdown procedures will remain in effect until the Director of OPR, NMFS (or designee) determines and advises L-DEO that all live animals involved have left the area (either of their own volition or following an intervention).
- (c) If further observations of the marine mammals indicate the potential for re-stranding, additional coordination with L-DEO will be required to determine what measures are necessary to minimize that likelihood (*e.g.*, extending the shutdown or moving operations farther away) and to implement those measures as appropriate.
- (d) Additional information requests – If NMFS determines that the circumstances of any marine mammal stranding found in the vicinity of the activity suggest investigation of the association with survey activities is warranted, and an investigation into the stranding is being pursued, NMFS will submit a written request to L-DEO indicating that the following initial available information must be provided as soon as possible, but no later than 7 business days after the request for information.
 - (i) Status of all sound source use in the 48 hours preceding the estimated time of stranding and within 50 km of the discovery/notification of the stranding by NMFS; and
 - (ii) If available, description of the behavior of any marine mammal(s) observed preceding (*i.e.*, within 48 hours and 50 km) and immediately after the discovery of the stranding.

In the event that the investigation is still inconclusive, the investigation of the association of the survey activities is still warranted, and the investigation is still being pursued, NMFS may provide additional information requests, in writing, regarding the nature and location of survey operations prior to the time period above.

- 8. This Authorization may be modified, suspended or withdrawn if the holder fails to abide by the conditions prescribed herein, or if NMFS determines the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals.
- 9. Renewals - On a case-by-case basis, NMFS may issue a one-time, one-year Renewal IHA following notice to the public providing an additional 15 days for public comments when

(1) up to another year of identical, or nearly identical, activities as described in the Specified Activities section of this notice is planned or (2) the activities as described in the Specified Activities section of this notice would not be completed by the time the IHA expires and a Renewal would allow for completion of the activities beyond that described in the Dates and Duration section of this notice, provided all of the following conditions are met:

- (a) A request for renewal is received no later than 60 days prior to the needed Renewal IHA effective date (recognizing that the Renewal IHA expiration date cannot extend beyond one year from expiration of the initial IHA).
- (b) The request for renewal must include the following:
 - (i) An explanation that the activities to be conducted under the requested Renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.*, reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).
 - (ii) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.
- (c) Upon review of the request for Renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Catherine Marzin,
Acting Director, Office of Protected Resources,
National Marine Fisheries Service.

Date

Table 1. Numbers of Incidental Take of Marine Mammals Authorized.

Species	MMPA Stock	Authorized Take		Total Authorized Take
		Level B	Level A	
LF Cetaceans				
Humpback whale	Central North Pacific	112	29	141
	California/Oregon/Washington			
Blue whale	Eastern North Pacific	40	11	51
Fin whale	California/Oregon/Washington	94	1	95
	Northeast Pacific			
Sei whale	Eastern North Pacific	30	2	32
Minke whale	California/Oregon/Washington	96	7	103
Gray whale	Eastern North Pacific	43	1	44
MF Cetaceans				
Sperm whale	California/Oregon/Washington	72	0	72
Baird's beaked whale	California/Oregon/Washington	84	0	84
Small beaked whale	California/Oregon/Washington	242	0	242
Bottlenose dolphin	California/Oregon/Washington (offshore)	13	0	13
Striped dolphin	California/Oregon/Washington	46	0	46
Short-beaked common dolphin	California/Oregon/Washington	179	0	179
Pacific white-sided dolphin	California/Oregon/Washington	6084	0	6084

Northern right-whale dolphin	California/Oregon/Washington	4318	0	4318
Risso’s dolphin	California/Oregon/Washington	1664	0	1664
False killer whale	Hawai'i Pelagic	5	0	5
Killer whale	Southern Resident	10	0	10
	Northern Resident	73	0	73
	West Coast Transient			
	Offshore			
Short-finned pilot whale	California/Oregon/Washington	29	0	29
HF Cetaceans				
Pygmy/dwarf sperm whale	California/Oregon/Washington	125	5	130
Dall's porpoise	California/Oregon/Washington	9762	488	10250
Harbor porpoise	Northern Oregon/Washington Coast	7958	283	8241
	Northern California/Southern Oregon			
Otariid Seals				
Northern fur seal	Eastern Pacific	4592	0	4592
	California			
Guadalupe fur seal	Mexico to California	2048	0	2048
California sea lion	U.S.	889	0	889
Steller sea lion	Eastern U.S.	7504	0	7504
Phocid Seals				
Northern elephant seal	California Breeding	2754	0	2754
Harbor seal	Oregon/Washington Coast	3887	0	3887

Table 2. Level B Harassment Zones by Water Depth

Water depth (m)	Level B harassment zone (m)
> 1000	6,733
100 – 1000	9,468
< 100	12,650

Table 3. Level A Harassment Zones by Hearing Group

Source (volume)	Threshold	Level A harassment zone (m)				
		LF cetaceans	MF cetaceans	HF cetaceans	Phocids	Otariids
36-airgun array (6,600 in ³)	SEL _{cum}	426.9	0	1.3	13.9	0
	Peak	38.9	13.6	268.3	43.7	10.6